

FACT SHEET



Mine Waste

February 2003

Introduction

The U.S. Environmental Protection Agency (EPA) Region 7 is providing this fact sheet as a public guidance on mine waste usage in the states of Missouri and Kansas. Some residual wastes from mining are a commercial commodity and have been used for many years. Proper use of the wastes can reduce some threats to the environment and to human health that currently exist. Removing mining waste piles can also bring non-productive land back to beneficial and safe use. However, improper uses of mine wastes may increase the threat to human health and the environment. The ultimate use of the material should not allow people, and in particular young children, to come into contact with the material easily.

Site Background

Historic lead and zinc mining in the Midwest was centered in two major areas: the Tri-State area covering more than 2,500 square miles in southwestern Missouri, southeastern Kansas, and northeastern Oklahoma and the Old Lead Belt covering about 110 square miles in southeastern Missouri. The first recorded mining occurred in the Old Lead Belt in about 1742. The production increased significantly in both the Tri-state area and the Old Lead Belt during the mid-1800s and lasted up to 1970. Currently production still occurs in a third area, the Viburnum Trend, in southeastern Missouri. Mining and milling of ore produced more than 500 million tons of wastes in the Tri-State area and about 250 million tons of wastes in the Old Lead Belt. More than 75 percent of the waste has been removed and used for many purposes over the years. Today, approximately 100 million tons of waste remain in the Tri-State area and 60 million tons in the Old Lead Belt. The EPA Region 7, the states of Kansas and Missouri, local communities, and private companies are working together to seek solutions to the potential adverse impacts of these mine wastes which are contaminated with lead, zinc, cadmium, and other metals.

Chat and Tailings

Ore production consisted of crushing and grinding the rock to standard sizes and separating the ore. Ore processing was accomplished in either a dry gravity separation or through a wet washing or flotation separation. Dry processes produced a fine gravel waste commonly called

“chat.” The wet processes resulted in the creation of tailings ponds used to dispose of waste material after ore separation. The wastes from wet separation are typically sand and silt size and are called “tailings.” Milling produces large chat waste piles and flat areas with tailings deposited in impoundments. Tailings generally contain higher concentrations of heavy metals and therefore present a higher risk to human health and the environment through ingestion.

Another lesser occurring type of mine waste is called development rock. Development rock is the waste rock generated in drilling shafts to the deep mines and therefore did not come from the major ore producing rocks. Typically, development rock consists of large boulders and is locally known as “bullrock.” Smelters also operated historically in Kansas, Missouri, and Oklahoma; however, this fact sheet does not address smelter related wastes.

Legal Considerations

If waste material is used in a way that creates a threat to human health or the environment, the owner of the property and the party responsible for creating the hazardous situation could be liable for a cleanup under the Superfund law. Because these mine wastes often contain lead, cadmium, zinc or other metal contaminants at levels that present a risk to both human health and the environment, using them in situations that would allow people or ecological receptors (animals, plants, fish, etc.) to regularly come into contact with the material could result in unacceptable situations which could be considered a Superfund problem. The property owners, haulers, operators, and individuals or businesses that sell, buy, or use mine waste materials must ensure they are using the materials in a manner that prevents direct contact by humans and other receptors and is not detrimental to the environment.

Typical uses

The EPA and the states of Kansas and Missouri are willing to provide assistance in reviewing specific uses of mine wastes but have no formal approval procedures. The following is a list of typical uses of mine wastes with a general assessment of whether or not the use may result in significant human health or environmental threats. The list represents EPA Region 7’s views on acceptable and unacceptable uses of mine wastes.

Mine waste uses that are not likely to present a threat to human health or the environment:

- Applications that bind material into a durable product. These would include its use as an aggregate in batch plants preparing asphalt and concrete.
- Applied below paving on asphalt or concrete roads and parking lots.
- Applications that cover the material with clean material particularly in areas that are not likely to ever be used for residential or public area development. Examples would include spreading chat around utility pipe in excavated trenches, or placing chat as deep fill on commercial sites.

- Applications that use the material as raw product for manufacturing a safe product, such as in manufacturing.

Mine waste uses that may present a threat to human health or the environment:

- Playground sand or surface material in play areas.
- Driveways, parking lots and roadways including roadway shoulders that are not paved.
- Residential usages in general. The placement in a residential setting could cause a problem in the future if an unknowing person excavated the material and allowed it to be re-exposed. Also, construction of residential homes or public use areas, such as parks or playgrounds on or very near mine waste piles may result in unacceptable exposures.
- Placement in public areas in which children play such as parks and school grounds.
- Placement of fill material which comes in contact with free-standing water in an excavation or with surface water.
- Sandblasting.
- Use as an agricultural soil amendment to adjust soil alkalinity.

Additional Information

If you would like additional information about this fact sheet or Superfund mining sites in Kansas or Missouri, please contact the EPA Region 7's Office of External Programs, 901 N. 5th Street, Kansas City, Kansas 66101, 1-913-551-7003, or toll-free, in Kansas and Missouri, 1-800-223-0425.